

JP 2004-524720

Derwent WPI

(c) 2007 The Thomson Corporation. All rights reserved.

0012487421

WPI Acc no: 2002-434594/200246

Related WPI Acc No: 2007-252479

XRPX Acc No: N2002-342099

Failing connection rescuing method in communication networks, involves continuing the connection at mobile station, when assumed code channels transmitted from sectors of communication network are received

Patent Assignee: DENSO CORP (NPDE); NIPPONDENSO CO LTD (NPDE)

Inventor: HUNZINGER J F; JASON F H

Patent Family (13 patents, 92 countries)

| Patent Number | Kind | Date | Application Number | Kind | Date | Update | Type |
|----------------|------|----------|--------------------|------|----------|--------|------|
| US 20020045443 | A1 | 20020418 | US 2000241268 | P | 20001017 | 200246 | B |
| | | | US 2000248900 | P | 20001114 | | |
| | | | US 2001978974 | A | 20011016 | | |
| WO 2002033982 | A2 | 20020425 | WO 2001US32464 | A | 20011016 | 200246 | E |
| AU 200215376 | A | 20020429 | AU 200215376 | A | 20011016 | 200255 | E |
| KR 2003057539 | A | 20030704 | KR 2003705354 | A | 20030416 | 200377 | E |
| CN 1470136 | A | 20040121 | CN 2001817519 | A | 20011016 | 200425 | E |
| JP 2004524720 | W | 20040812 | WO 2001US32464 | A | 20011016 | 200453 | E |
| | | | JP 2002536850 | A | 20011016 | | |
| AU 2002215376 | A8 | 20051013 | AU 2002215376 | A | 20011016 | 200611 | E |
| US 7133675 | B2 | 20061107 | US 2001978974 | A | 20011016 | 200673 | E |
| CN 1265655 | C | 20060719 | CN 2001817519 | A | 20011016 | 200678 | E |
| KR 593866 | B1 | 20060630 | WO 2001US32464 | A | 20011016 | 200708 | E |
| | | | KR 2003705354 | A | 20030416 | | |
| CN 1878336 | A | 20061213 | CN 200610092492 | A | 20011016 | 200726 | E |
| CN 1897753 | A | 20070117 | CN 200610100768 | A | 20011016 | 200735 | E |
| JP 3948403 | B2 | 20070725 | WO 2001US32464 | A | 20011016 | 200750 | E |
| | | | JP 2002536850 | A | 20011016 | | |

Priority Applications (no., kind, date): US 2000241268 P 20001017; US 2000248900 P 20001114;
US 2001978974 A 20011016

Patent Details

| Patent Number | Kind | Lan | Pgs | Draw | Filing Notes | |
|--------------------------------------|---|-----|-----|------|------------------------|---------------|
| US 20020045443 | A1 | EN | 30 | 17 | Related to Provisional | US 2000241268 |
| | | | | | Related to Provisional | US 2000248900 |
| WO 2002033982 | A2 | EN | | | | |
| National Designated States, Original | AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG | | | | | |

| | | | | | | | | | | |
|-------------------------------------|--|----|-----|--|--------------------------|--|--|--|--|----------------|
| | KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW | | | | | | | | | |
| Regional Designated States/Original | AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW | | | | | | | | | |
| AU 200215376 | A | EN | | | Based on OPI patent | | | | | WO 2002033982 |
| JP 2004524720 | W | JA | 105 | | PCT Application | | | | | WO 2001US32464 |
| | | | | | Based on OPI patent | | | | | WO 2002033982 |
| AU 2002215376 | A8 | EN | | | Based on OPI patent | | | | | WO 2002033982 |
| KR 593866 | B1 | KO | | | PCT Application | | | | | WO 2001US32464 |
| | | | | | Previously issued patent | | | | | KR 2003057539 |
| | | | | | Based on OPI patent | | | | | WO 2002033982 |
| JP 3948403 | B2 | JA | 37 | | PCT Application | | | | | WO 2001US32464 |
| | | | | | Previously issued patent | | | | | JP 2004524720 |
| | | | | | Based on OPI patent | | | | | WO 2002033982 |

Alerting Abstract US A1

NOVELTY - The potentially failing connection is detected and several pilots corresponding to the sectors of the communication network are added to the mobile station (MS) (10) active set. Assumed code channels (ACCs) are transmitted from a sector to the MS for rescue. The connection at the MS is continued, when the ACCs are received by the MS.

DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

1. Network operation method;
2. Communication system for enabling communications with mobile users;
3. Communication system for assisting in rescuing; and
4. Mobile station.

USE - In paging systems, satellite, cordless phone, fleet communication systems for preventing loss of signal and dropped connections between wireless terminals used in commercial, military or other applications and wireless communication network.

ADVANTAGE - The procedure is centralized and thus overcomes the efficiency, delay and power control type problems associated with decentralized procedures. The transmission of ACC from a sector minimizes capacity impact of rescue as the network knows its capacity and traffic and coordinates within itself where and when to transmit the ACC.

DESCRIPTION OF DRAWINGS - The figure shows roving mobile station moving amongst different locations between sectors in the wireless communication network.

Main Drawing Sheet(s) or Clipped Structure(s)

Title Terms /Index Terms/Additional Words: FAIL.; CONNECT; RESCUE; METHOD;
COMMUNICATE.; NETWORK; CONTINUE; MOBILE; STATION; ASSUME; CODE;
CHANNEL.; TRANSMIT; SECTOR ; RECEIVE

Class Codes

| International Patent Classification | | | | | |
|-------------------------------------|-------------|-------|----------|--------|--------------|
| IPC | Class Level | Scope | Position | Status | Version Date |
| H04Q-007/20; H04Q-007/38 | | | Main | | "Version 7" |
| H04Q-0007/00 | A | I | L | B | 20060101 |
| H04Q-0007/20 | A | I | F | | 20060101 |
| H04Q-0007/20 | A | I | F | B | 20060101 |
| H04Q-0007/34 | A | I | L | | 20060101 |
| H04Q-0007/36 | A | I | | R | 20060101 |
| H04Q-0007/38 | A | I | F | R | 20060101 |
| H04Q-0007/38 | A | I | F | | 20060101 |
| H04Q-0007/38 | A | I | F | B | 20060101 |
| H04Q-0007/00 | C | I | L | B | 20060101 |
| H04Q-0007/20 | C | I | F | B | 20060101 |
| H04Q-0007/34 | C | I | | | 20060101 |
| H04Q-0007/36 | C | I | | R | 20060101 |
| H04Q-0007/38 | C | I | F | R | 20060101 |
| H04Q-0007/38 | C | I | | | 20060101 |
| H04Q-0007/38 | C | I | | B | 20060101 |

US Classification, Issued: 455436000, 455450000, 455421000, 455437000, 455436000, 455439000, 455442000, 455443000, 455444000, 370331000, 370328000, 370332000

File Segment: EPI;

DWPI Class: W01; W02

Manual Codes (EPI/S-X): W01-B05A1; W01-C02A; W02-C03B1; W02-C03C; W02-C05

Original Publication Data by Authority

Australia

Publication No. AU 200215376 A (Update 200255 E)

Publication Date: 20020429

Assignee: DENSO CORP; JP (NPDE)

Language: EN

Application: AU 200215376 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Related Publication: WO 2002033982 A (Based on OPI patent)

Original IPC: H04Q-7/20(A)

Current IPC: H04Q-7/36(R,I,M,EP,20060101,20051008,A) H04Q-

7/36(R,I,M,EP,20060101,20051008,C) H04Q-7/38(R,I,M,JP,20060101,20051220,A,F) H04Q-7/38(R,I,M,JP,20060101,20051220,C,F)

Publication No. AU 2002215376 A8 (Update 200611 E)

Publication Date: 20051013

Forward link based rescue channel method and apparatus for telecommunication systems

Assignee: DENSO CORP (NPDE)

Inventor: HUNZINGER J F

Language: EN

Application: AU 2002215376 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Related Publication: WO 2002033982 A (Based on OPI patent)

Original IPC: H04Q-7/20(A)

Current IPC: H04Q-7/20(A)

China

Publication No. CN 1265655 C (Update 200678 E)

Publication Date: 20060719

Assignee: DENSO CORP; JP (NPDE)

Inventor: JASON F H

Language: ZH

Application: CN 2001817519 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Original IPC: H04Q-7/20(I,CN,20060101,A,F)

Current IPC: H04Q-7/20(I,CN,20060101,A,F)

Publication No. CN 1470136 A (Update 200425 E)

Publication Date: 20040121

Assignee: DENSO CORP; JP (NPDE)

Language: ZH

Application: CN 2001817519 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Original IPC: H04Q-7/20(A)

Current IPC: H04Q-7/36(R,I,M,EP,20060101,20051008,A) H04Q-

7/36(R,I,M,EP,20060101,20051008,C) H04Q-7/38(R,I,M,JP,20060101,20051220,A,F) H04Q-

7/38(R,I,M,JP,20060101,20051220,C,F)

Publication No. CN 1878336 A (Update 200726 E)

Publication Date: 20061213

Assignee: DENSO CORP; JP (NPDE)

Inventor: HUNZINGER J F

Language: ZH

Application: CN 200610092492 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Original IPC: H04Q-7/20(I,CN,20060101,A,F) H04Q-7/20(I,M,98,20060101,C) H04Q-7/36(I,CN,20060101,A,L) H04Q-7/36(I,M,98,20060101,C) H04Q-7/38(I,CN,20060101,A,L) H04Q-7/38(I,M,98,20060101,C)

Current IPC: H04Q-7/20(B,A,I,H,CN,20060101,20061213,A,F) H04Q-7/20(B,I,H,CN,20060101,20061213,C,F)

Publication No. CN 1897753 A (Update 200735 E)

Publication Date: 20070117

Assignee: DENSO CORP; JP (NPDE)

Inventor: HUNZINGER J F

Language: ZH

Application: CN 200610100768 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Original IPC: H04Q-7/34(I,CN,20060101,A,L) H04Q-7/34(I,M,98,20060101,C) H04Q-7/38(I,CN,20060101,A,F) H04Q-7/38(I,M,98,20060101,C)

Current IPC: H04Q-7/34(A,I,CN,20060101,A,L) H04Q-7/34(I,M,98,20060101,C) H04Q-7/38(I,CN,20060101,A,F) H04Q-7/38(I,M,98,20060101,C)

Japan

Publication No. JP 2004524720 W (Update 200453 E)

Publication Date: 20040812

Language: JA (105 pages)

Application: WO 2001US32464 A 20011016 (PCT Application)

JP 2002536850 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Related Publication: WO 2002033982 A (Based on OPI patent)

Original IPC: H04Q-7/38(A)

Current IPC: H04Q-7/38(A)

Publication No. JP 3948403 B2 (Update 200750 E)

Publication Date: 20070725

Assignee: NIPPONDENSO CO LTD (NPDE)

Language: JA (37 pages)

Application: WO 2001US32464 A 20011016 (PCT Application)

JP 2002536850 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Related Publication: JP 2004524720 A (Previously issued patent)

WO 2002033982 A (Based on OPI patent)
Original IPC: H04Q-7/38(B,I,H,JP,20060101,20070705,A,F) H04Q-7/38(B,I,M,98,20060101,20070705,C)
Current IPC: H04Q-7/38(B,I,H,JP,20060101,20070705,A,F) H04Q-7/38(B,I,M,98,20060101,20070705,C)

Korea

Publication No. KR 2003057539 A (Update 200377 E)
Publication Date: 20030704
Assignee: DENSO CORP (NPDE)
Language: KO
Application: KR 2003705354 A 20030416 (Local application)
Priority: US 2000241268 P 20001017
US 2000248900 P 20001114
Original IPC: H04Q-7/20(A) H04Q-7/20(A)
Current IPC: H04Q-7/20(A) H04Q-7/20(A)

Publication No. KR 593866 B1 (Update 200708 E)
Publication Date: 20060630
Assignee: DENSO CORP (NPDE)
Inventor: HUNZINGER J F
Language: KO
Application: WO 2001US32464 A 20011016 (PCT Application)
KR 2003705354 A 20030416 (Local application)
Priority: US 2000241268 P 20001017
US 2000248900 P 20001114
Related Publication: KR 2003057539 A (Previously issued patent)
WO 2002033982 A (Based on OPI patent)
Original IPC: H04Q-7/20(B,I,H,KR,20060101,20030627,A,F) H04Q-7/20(B,I,M,98,20060101,20030627,C,F)
Current IPC: H04Q-7/20(B,I,H,KR,20060101,20030627,A,F) H04Q-7/20(B,I,M,98,20060101,20030627,C,F)

United States

Publication No. US 20020045443 A1 (Update 200246 B)
Publication Date: 20020418
Forward link based rescue channel method and apparatus for telecommunication systems
Assignee: DENSO CORPORATION, US (NPDE)
Inventor: Hunzinger, Jason F., Carlsbad, CA, US
Agent: Glenn M. Kubota, Morrison & Foerster LLP, 35th Floor, 555 W. 5th Street, Los Angeles, CA, US
Language: EN (30 pages, 17 drawings)
Application: US 2000241268 P 20001017 (Related to Provisional)
US 2000248900 P 20001114 (Related to Provisional)

US 2001978974 A 20011016 (Local application)

Original IPC: H04Q-7/20(A)

Current IPC: H04Q-7/36(R,A,I,M,EP,20060101,20051008,A) H04Q-

7/36(R,I,M,EP,20060101,20051008,C)

Original US Class (secondary): 455436 455450 455421

Original Abstract: A forward rescue procedure (FRP) for preventing loss of signal and dropped connections between a mobile station and the infrastructure in a wireless telecommunications network is disclosed. The FRP allows wireless systems to recover from forward link failures at the mobile station that would otherwise result in dropped connections. Examples of failure scenarios that can be overcome using the FRP include forward link Layer 2 acknowledgement failures and loss of forward link signal due to a fade that causes loss of signal for a period of time exceeding a threshold value. In response to a potential connection drop situation, a mobile station will autonomously add base station pilot channels to the active set of its rake receiver in order to rescue the connection in danger of dropping. Concurrently, the wireless network infrastructure will initiate transmission on alternative forward link channels that are likely to be monitored by the mobile station during an FRP. If the same channels are monitored by the MS and transmitted on by the infrastructure, the connection in danger of dropping can be rescued.

Claim: What is claimed is:

1. In a communications network having a plurality of sectors and a mobile station (MS) having a potentially failing connection, the MS including a MS active set, a method for rescuing the potentially failing connection, comprising:
 - detecting the potentially failing connection;
 - adding one or more pilots to the MS active set, each pilot corresponding to one of the plurality of sectors;
 - determining one or more assumed code channels (ACCs) for use in the rescue;
 - transmitting one of the ACCs from at least one of the plurality of sectors;
 - at the MS, searching for one or more ACCs from the sectors corresponding to the pilots in the MS active set;
 - at the MS, discovering one or more ACCs are receivable from at least one of the plurality of sectors; and
 - continuing the connection at the MS when the one or more receivable ACCs are discovered.

Publication No. US 7133675 B2 (Update 200673 E)

Publication Date: 20061107

Forward link based rescue channel method and apparatus for telecommunication systems

Assignee: Denso Corporation, Kariya, JP (NPDE)

Hunzinger, Jason F., Carlsbad, CA, US **Residence:** US

Inventor: Hunzinger, Jason F., Carlsbad, CA, US **Residence:** US

Agent: Morrison & Foerster LLP

Language: EN

Application: US 2001978974 A 20011016 (Local application)

Original IPC: H04Q-7/00(B,I,H,US,20060101,20061107,A,L) H04Q-

7/20(B,I,H,US,20060101,20061107,A,F)

Current IPC: H04Q-7/00(B,I,H,US,20060101,20061107,A,L) H04Q-

7/00(B,I,H,US,20060101,20061107,C,L) H04Q-7/20(B,I,H,US,20060101,20061107,A,F) H04Q-

7/20(B,I,H,US,20060101,20061107,C,F) H04Q-7/36(R,I,M,EP,20060101,20051008,A) H04Q-

7/36(R,I,M,EP,20060101,20051008,C)

Original US Class (secondary): 455437 455436 455439 455442 455443 455444 370331 370328 370332

Original Abstract: A forward rescue procedure (FRP) for preventing loss of signal and dropped connections between a mobile station and the infrastructure in a wireless telecommunications network is disclosed. The FRP allows wireless systems to recover from forward link failures at the mobile station that would otherwise result in dropped connections. Examples of failure scenarios that can be overcome using the FRP include forward link Layer 2 acknowledgement failures and loss of forward link signal due to a fade that causes loss of signal for a period of time exceeding a threshold value. In response to a potential connection drop situation, a mobile station will autonomously add base station pilot channels to the active set of its rake receiver in order to rescue the connection in danger of dropping. Concurrently, the wireless network infrastructure will initiate transmission on alternative forward link channels that are likely to be monitored by the mobile station during an FRP. If the same channels are monitored by the MS and transmitted on by the infrastructure, the connection in danger of dropping can be rescued.

Claim: What is claimed is:

1. In a mobile station (MS), a method for continuing a connection between the MS and a network, comprising:
 - detecting an acknowledgement failure, wherein the acknowledgement failure is detected when the MS has not received an acknowledgement to a message sent by the MS after a certain number of retransmissions of the message by the MS;
 - disabling a transmitter of the MS when the acknowledgement failure is detected; and
 - initiating a call rescue handoff after disabling the transmitter;
 - wherein the call rescue handoff includes
 - autonomously adding a pilot corresponding to a rescue channel to an active set of the MS,
 - enabling the transmitter after adding the pilot to the active set,
 - monitoring the rescue channel for good frames, and
 - continuing the connection when the good frames are received; and
 - wherein the acknowledgement failure is determined by detecting a Layer 2 acknowledgement failure.

WIPO

Publication No. WO 2002033982 A2 (Update 200246 E)

Publication Date: 20020425

FORWARD LINK BASED RESCUE CHANNEL METHOD AND APPARATUS FOR TELECOMMUNICATION SYSTEMS

PROCEDE ET APPAREIL A CANAL DE SECOURS EN LIAISON AVAL POUR SYSTEMES DE TELECOMMUNICATION

Assignee: (except US) DENSO CORPORATION, 1-1, Showa-cho, Kariya-shi, Aichi-ken 448-8661.

JP Residence: JP Nationality: JP (NPDE)

(only US) HUNZINGER, Jason, F., 3425 Calle Del Sur, Carlsbad, CA 92009, US Residence: US Nationality: CA

Inventor: HUNZINGER, Jason, F., 3425 Calle Del Sur, Carlsbad, CA 92009, US Residence: US

Nationality: CA

Agent: KUBOTA, Glenn, M., Morrison & Foerster LLP, Suite 3500, 555 W. Fifth Street, Los Angeles, CA 90013-1024, US

Language: EN

Application: WO 2001US32464 A 20011016 (Local application)

Priority: US 2000241268 P 20001017

US 2000248900 P 20001114

Designated States: (National Original) AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SJ SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

(Regional Original) AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW

Original IPC: H04Q(A)

Current IPC: H04Q-7/36(R,A,I,M,EP,20060101,20051008,A) H04Q-

7/36(R,I,M,EP,20060101,20051008,C) H04Q-7/38(R,I,M,JP,20060101,20051220,A,F) H04Q-

7/38(R,I,M,JP,20060101,20051220,C,F)

Original Abstract: A forward rescue procedure (FRP) for preventing loss of signal and dropped connections between a mobile station and the infrastructure in a wireless telecommunications network is disclosed. The FRP allows wireless systems to recover from forward link failures at the mobile station that would otherwise result in dropped connections. Examples of failure scenarios that can be overcome using the FRP include forward link Layer 2 acknowledgement failures and loss of forward link signal due to a fade that causes loss of signal for a period of time exceeding a threshold value. In response to a potential connection drop situation, a mobile station will autonomously add base station pilot channels to the active set of its rake receiver in order to rescue the connection in danger of dropping. Concurrently, the wireless network infrastructure will initiate transmission on alternative forward link channels that are likely to be monitored by the mobile station during an FRP. If the same channels are monitored by the MS and transmitted on by the infrastructure, the connection in danger of dropping can be rescued.

L'invention concerne une procedure de secours aval (FRP) permettant d'eviter toute perte de signal ou coupure de connexion entre une station mobile et l'infrastructure d'un reseau de telecommunications sans fil. Cette procedure permet aux systemes sans fil de retablir la ligne suite a des defaillances de liaison aval dans une station mobile, entrainant, dans le cas contraire, des coupures de connexions. Cette procedure permet de resoudre certains scenarios de defaillances, y compris les defaillances relatives aux accusés de réception de couche de liaison de niveau 2 aval et les pertes de signal de liaison aval dues a un evanouissement, entrainant une perte de signal pendant une duree depassant une valeur seuil. En reponse a une situation de coupure de connexion potentielle, une station mobile ajoute de facon autonome des canaux pilotes de station de base a l'ensemble actif de son recepteur Rake afin de sauver la connexion risquant d'etre coupee. En parallele, l'infrastructure du reseau sans fil lance la transmission sur des canaux de liaison aval differents susceptibles d'etre controlees par la station mobile durant la procedure de secours aval. Si les memes canaux sont controlees par la station mobile (MS) et transmis par ladite infrastructure, la connexion risquant d'etre coupee peut etre retablie.